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Part V

Department of Education

National Institute on Disability and Rehabilitation Research; Notice of Proposed Funding Priorities for Fiscal Years 1989–1990

DEPARTMENT OF EDUCATION

National Institute on Disability and Rehabilitation Research; Funding Priorities.

AGENCY: Department of Education.

ACTION: Notice of proposed funding priorities for Fiscal Years 1989–1990.

SUMMARY: The Secretary of Education proposes funding priorities for some of the research activities to be supported under the Rehabilitation Research and Training Center (RRTC), Rehabilitation Engineering Center (REC), Research and Demonstration (R&D), and Knowledge Dissemination and Utilization (D&U) programs of the National Institute on Disability and Rehabilitation Research (NIDRR) in fiscal years 1989 and 1990.

DATE: Interested persons are invited to submit comments or suggestions regarding the proposed priorities on or before December 15, 1988.

ADDRESSES: All written comments and suggestions should be sent to Betty Jo Berland, National Institute on Disability and Rehabilitation Research, Department of Education, 400 Maryland Avenue, SW., Rooms 3070, Switzer Building, Washington, DC 20202–2601.

FOR FURTHER INFORMATION CONTACT: Betty Jo Berland, National Institute on Disability and Rehabilitation Research (Telephone: (202) 732–1139). Deaf and hearing-impaired individuals may call (202) 732–1198 for TDD services.

SUPPLEMENTARY INFORMATION: NIDRR proposes funding priorities for two fiscal years under several of its programs. This presents each program separately, with a description of the program followed by the proposed priorities in that program.

Authority for the Rehabilitation Research and Training Center program of NIDRR is contained in section 204(b)(1) of the Rehabilitation Act of 1973, as amended. Under the RRTC program, awards are made to institutions of higher education, or to public and private organizations, including Indian tribes and tribal organizations, that are affiliated with institutions of higher education.

RRTCs conduct programmatic, multidisciplinary, and synergistic research, training, and information dissemination in designated areas of high priority. NIDRR's regulations authorize the Secretary to establish research priorities by reserving funds to support particular research activities (see 34 CFR 352.32). The following proposed priorities represent areas of research derived from "state-of-the-art" meetings, planning conferences, and other participatory activities.

NIDRR invites public comment on the merits of the proposed priorities, including suggested modifications to the proposed priorities. The final priorities will be established on the basis of public comment, the availability of funds, and any other relevant Departmental considerations, and will be announced in a notice in the **Federal Register**. A closing date notice will be published at that time, after which application packages will be available. This Notice of Proposed Priorities does not solicit applications, and Department of Education staff will not review concept papers or pre-applications. The publication of these proposed priorities does not bind the Federal Government to fund projects in any of these areas, except as otherwise directed by statute. Funding of particular projects depends on final priorities, the availability of funds, and on the quality of the applications that are received.

A program of Rehabilitation Research and Training Centers has been established to conduct coordinated and advanced programs of rehabilitation research and to provide training to rehabilitation personnel engaged in research or the provision of services. RRTCs must be opperated in collaboration with institutions of higher education and must be associated with rehabilitation service programs. Each Center conducts a synergistic program of research, evaluation, and training activities focused on a particular rehabilitation problem area. Each Center is encouraged to develop practical applications for all of its research findings. Centers generally disseminate and encourage the utilization of new rehabilitation knowledge through such means as writing and publishing undergraduate and graduate texts and curricula and publishing findings in professional journals. All materials that the Centers develop for dissemination and training must be accessible to individuals with a range of handicapping conditions. RRTCs also conduct programs of in-service training for rehabilitation practitioners, education at the pre-doctoral and post-doctoral levels, and continuing education. Each RRTC must conduct an interdisciplinary program of training in rehabilitation research, including training in research methodology and applied research experience, that will contribute to the number of qualified researchers working in the area of rehabilitation research. Centers must also conduct state-of-the-art studies in relevant aspects of their priority areas. Each RRTC must also provide training to individuals with disabilities and their families in managing and coping wtih disabilities.

NIDRR will conduct, not later than three years after the establishment of any RRTC, one or more reviews of the activities and achievements of the Center. Continued funding depends at all times on satisfactory performance and accomplishment, in accordance with the provisions of 34 CFR 75.253(a).

Rehabilitation Research and Training Centers

Rehabilitation for Persons With Long-Term Mental Illness

There are over two million persons with long-term, severe mental illness. Improved rehabilitation interventions and service delivery models are needed to afford better opportunities for this population to remain out of institutions and to attain satisfactory lives in their communities. The population of adults with severe psychiatric disabilities spans all ages.

Results of research and practice indicate that specialized rehabilitative interventions can increase the likelihood of community adjustment for persons with long-term mental illness. It is important to continue to develop and test more effective rehabilitative interventions, including especially those that contribute to improvements in education, vocational status, and general health care.

NIDEE, with the cooperation of the National Institute of Mental Health, intends to fund an RRTC to address these issues. Any Center to be funded under this priority must involve persons with long/term mental illness and their family members in the planning, conduct, and evaluation of the research and training activities.

An absolute priority is proposed for an RRTC to:

- Analyze employment patterns, obstacles to employment, and employment options for individuals with long-term, severe mental illness;
- Develop and test model rehabilitative program interventions to improve employment outcomes, and assess the cost-effectiveness of these options;
- Analyze the role of rehabilitative interventions in the management of crisis episodes, study the relationship between crisis assistance programs and rehabilitation, and develop and test models for appropriate management of crises in rehabilitation;
- Analyze the relationship between psychiatric and mental health treatment regimens and rehabilitation interventions, and develop and test

model programs for integrating mental health treatment with rehabilitation;

• Identify the most effective techniques to assist families with individuals with long-term severe mental illness both to maintain family functioning and to maximize the effective contribution of family members to the rehabilitation process;

• Develop and test new rehabilitation intervention techniques and systems of rehabilitative care, examining methods to integrate effectively a range of discrete community or hospital-based services in planning, implementing, financing, and evaluating client rehabilitation;

• Conduct at least one study of the state-of-the-art in one of the above areas; and

• Provide training to relevant parties, including vocational rehabilitation counselors, family members, and other service providers, and disseminate all findings to appropriate audiences.

Research and Training Center in Independent Living

The concept of Independent Living (IL) has emerged as an important service program as well as an important principle for individuals with disabilities. This concept embraces such goals as self-determination, self-help, deinstitutionalization, and barrier-free access to services and opportunities previously unavailable to persons with disabilities. The Congress acknowledged the importance of this theme in the passage of Title VII of the Rehabiliation Amendments of 1978, establishing a separate authority for Independent Living service programs.

The 1984 amendments to the 1978 Act appropriated funds to implement Part A of Title VII by State agencies to implement statewide IL delivery systems. The Rehabilitation Act Amendments of 1986 mandated the development of program standards and performance indicators to assess the performance of the Federally-funded Independent Living programs.

Implementation of the Independent Living programs of the Act requires an understanding of the boundaries of the program (e.g. eligibility, types of services), high quality program management, and of the goals, philosophy, and social policy implications of Independent Living. Continuing research is needed to support the development and refinement of the Independent Living concept and to enhance the quality of services and the success of the programs.

An absolute priority is proposed for an RRTC to:

• Assess the quality of community services available to individuals with disabilities, evaluate the impact of those services on independent living, and develop and test models to integrate general community services with IL services to enhance the ability of persons with disabilities to live independently;

• Develop methods to infuse IL and rehabilitation concepts into long-term care institutions for those who must have extended stays in such institutions and determine the optimum roles for IL programs in relation to such institutions.

• Develop and test models for IL programs to assist in the transition of individuals from both long-and-short-term rehabilitation care facilities into independent living in the community;

• Develop and test research-based models to coordinate IL with vocational rehabilitation programs and with supported employment programs in order to enhance the effectiveness of all three types of programs and improve outcomes for individuals with disabilities;

• Develop, on the basis of assessments and analyses, and test models whereby IL programs can be involved most effectively in the effort to improve the delivery of rehabilitation engineering services and technological aids and devices to persons with disabilities;

• Assess the potential of ILCs to provide services to previously underserved populations, such as those with cognitive impairments and emotional disorders, those with low-incidence disabilities;

• Conduct a comparative analysis of the characteristics of specialized and generic IL centers in terms of their effectiveness in assisting individuals with disabilities to live more independently;

• Develop model management training programs and provide technical assistance and training to IL program staff to enhance management performance;

• Analyze patterns of funding and the potential for alternative funding sources, such as local governments and private agencies; and

• Provide training to relevant staff of IL programs at the State and Center levels of the findings of the research and disseminate findings widely throughout the IL and rehabilitation fields.

Community Integration for Persons with Mental Retardation

Professionals and policymakers are realizing that children and adults with mental retardation fare best in natural community environments. It is no longer a matter of whether people with the most severe disabilities can be served in their communities. It is a question of how to best support people with severe mental retardation and other disabilities to enable them to remain and thrive in their communities. However, it is not good enough to be "in" the community; people with severe mental retardation have to be part of their communities. The objective of this Center is to develop and disseminate state-of-the-art technologies for achieving this goal.

Families and communities must have current information regarding best practices and creative funding mechanisms for developing and staffing family-scale living arrangements for people with mental retardation. One of the major problems facing the field is that of staff burn-out and excessive turnover. Effective strategies are needed to recruit, train, and retain direct care staff so that turnover rates, which now exceed twenty percent annually, can be reduced. Families need information that will help them identify the characteristics of high quality living environments and community-based vocational and recreational programs. States and communities need information that will enable them to modify service delivery systems and community-based programs in order to meet the individual needs of persons with mental retardation who are leaving large public and private institutions. They need to know how to identify and replicate existing programs and how to design new programs that will maximize the independence, productivity, and social integration of persons with mental retardation. In addition, social agencies need information to develop better methods to coordinate the delivery of social, educational, transportation, and vocational services and to reduce the existing fragmentation of services.

Generic community-based services and programs offer ideal settings for the enhancement of social networks for people with mental retardation. Community-based service providers need to learn how to identify generic programs that can be helpful to persons with mental retardation and help them to integrate the target group into general community social programs.

The proposed Center is to conduct a program of coordinated research and training activities and to disseminate rehabilitation approaches that will assist States, communities, and families to develop strategies for ensuring the full participation of people with mental retardation in their communities.

Any Center to be supported in response to this priority should involve persons with mental retardation and their families in the design, implementation, and evaluation of Center activities.

An absolute priority is proposed for an RRTC to:

- Identify best practices and creative funding mechanisms that will allow for the development of family-scale living arrangements and develop and disseminate that will promote the adoption of the best practices;
- Develop and test research-based models for recruiting, training, and retraining direct care personnel in agencies providing services to individuals with mental retardation;
- Identify, develop, and evaluate strategies that will enable States and committees to facilitate successful integration into the community of persons leaving institutions;
- Conduct a study to identify and analyze Federal, State, and local funding available for the rehabilitation of persons with mental retardation and suggest ways to improve the coordination of funding mechanisms;
- Identify best practices and the characteristics of natural environments that are successful in enhancing the independence, productivity, and social integration of persons with mental retardation and develop materials that will help families and service providers design new and evaluate existing community-based programs;
- Develop and test research-based models for the integration of persons with mental retardation into generic social service programs;
- Develop a database on community integration information and serve as a national resource for information in this area; and
- Conduct at least two studies of the state-of-the-art on community integration of persons with mental retardation and disseminate the research findings.

Rehabilitation Engineering Centers (4 priorities)

Authority for the Rehabilitation Engineering Center Program of NIDRR is contained in section 204(b)(2) of the Rehabilitation Act of 1973, as amended. Under this program, awards are made to public and private agencies and organizations including institutions of higher education, Indian tribes, and tribal organizations.

NIDRR supports a program of Rehabilitation Engineering Centers (RECs) that conduct coordinated programs of advanced research of an engineering or technological nature. RECs work to develop systems for the exchange of technical and engineering information and to improve the distribution of technological devices and equipment to individuals with handicaps. Each REC must be located in a clinical rehabilitation setting and is encouraged to collaborate with instructions of higher education.

Each REC conducts a program of research, scientific evaluation, and training that advances the state of the art in technology or its application; contributes substantially to the solution of rehabilitation problems; and becomes an acknowledged center of excellence in a given subject area. RECs are encouraged to develop practical application for their research through scientific evaluation activities that validate their findings as well as related findings of other centers. RECs generally conduct training programs to disseminate and encourage utilization of new rehabilitation engineering knowledge through such means as development of or contribution to undergraduate and graduate texts and curricula, in-service training, continuing education, and the distribution of information and appropriate technology. Each REC must ensure that all training and information materials developed by the Center are presented in several formats that will be accessible to individuals with various types of sensory and mobile impairments.

NIDRR will conduct, not later than three years after the establishment of any REC, one or more reviews of the activities and achievements of the Center, to include review by peers. Continued funding depends at all times on satisfactory performance and accomplishment in accordance with the provisions of 34 CFR 375.253(a).

Priorities

Personal Licensed Transportation Systems for Disabled Persons

The ability to move from place to place rapidly, conveniently, safely, and economically is a prerequisite to full participation in American society. Although both private and public transportation systems exist, private transportation in a personal vehicle is frequently the only means of transportation available for the handicapped person. There are, however, no commonly accepted standards for the adaptation of personal vehicles to accommodate disabled individuals as drivers or passengers. Adaptations may compromise the structural stability and safety of the vehicle, may not provide easy boarding or safe and rapid exit from the vehicle, and may include unsafe or ineffective control devices. Seating systems and systems for securing wheelchairs in the vehicles are often unsafe and ineffective.

Any Center to be funded in response to this priority should include persons with disabilities, their families and the community rehabilitation service providers in the planning, implementation and assessment of Center activities, especially in the assessment of needs, the identification of devices and systems to be tested, and the dissemination of information.

The Center shall establish or be associated with a service delivery system that provides means of personal automotive transportation for persons with disabilities, and shall serve as a national model for the evaluation, testing, and collection of information regarding real-world performance of adapted vehicles as a mechanism for increasing the flow of information and communication between the researchers, consumers, service providers, and the automotive industry.

The Center shall establish and maintain mechanisms for collaborating and cooperating with: agencies and organizations responsible for the development and maintenance of any standards for adaptive motor vehicles; with the private sector to promote the manufacture, distribution, and testing of new devices and systems; with the REC in Wheelchair Modifications for technology sharing in wheelchair designs, and with the rehabilitation service delivery system to ensure the transfer of information to service providers.

The Center shall serve as a national resource for information on personal vehicle designs and adaptations for disabled persons and maintain a database on national and international research and development activities in this area for reference and dissemination.

An absolute priority is proposed for an REC to:

- Evaluate existing vehicle modification devices and equipment and develop and test new devices and systems that include personal vehicle safety systems such as wheelchair tie-downs, occupant restraints, emergency exit systems, alerting devices for hearing impaired drivers, and primary and secondary control systems that do not compromise the vehicle's compliance with standards set by the Society of Automotive Engineers and the United States Department of Transportation;

• Develop and evaluate access and exit systems including ramps, lifts, and wheelchair loading devices that provide access to personal vehicles while maintaining the structural integrity of the vehicle.

• Develop materials for national dissemination of information on the adaptive vehicle devices and provide training to engineers, disabled drivers, personal attendants, and rehabilitation counselors in the proper use of these devices.

• Disseminate materials to automobile manufacturers and educate them on the benefits of producing and marketing such devices; and

• Conduct at least one comprehensive study of the state-of-the-art in personal vehicle transportation systems for disabled persons to increase the knowledge base and to provide recommendations for future research in the area.

Applications of Technology to the Rehabilitation of Children with Orthopedic Disabilities

Orthopedic impairments sufficient to cause disability account for one-third of all disabilities in children. The aggregated prevalence of orthopedic impairments and musculoskeletal deformities for children aged 0–17 is estimated at 14.2 per 1,000 and frequently account for the greatest activity limitations and reductions in the quality of life.

Although technology is now available for restoring some lost functions, there continues to be a marked delay in the acquisition of devices needed to restore function and prevent further limitation in children. There is a lack of available professionally-trained clinicians to attend to the needs of disabled children for advanced technology as well as for maintenance and repair at local levels.

An absolute priority is proposed for an REC to:

• Develop and evaluate improved body-powered and externally-powered terminal devices for enhancing strength of grasp, externally-powered elbows and shoulders, and adjustable sockets for children;

• Develop and evaluate new control systems to enable children to operate externally-powered components more effectively;

• Develop and test an improved prosthetic foot for older children;

• Develop innovative strategies to enable children and their families to learn about, finance, and use the new technology; and

• Develop and demonstrate dissemination centers that enable children and families, as well as clinicians, to see and test available equipment.

The Application of Computer-Assisted Design and Computer-Assisted Manufacture Methods to Prosthetics and Orthotics

While the functional roles of prosthesis and orthoses are many and varied, a unifying commonality is the high degree of experience and skill required for the effective fitting of these devices. Because these devices require custom fitting, clinicians tend to use low technology and manual applications in the design and fabrication processes. Although the production of standardized components that the prosthetist or orthotist may use in the fabrication of the device may be automated; automation is still not widely used in the design, fabrication, assembly, fitting, or evaluation of a complete prosthetic or orthotic appliance.

This may be attributed to the fact that authomation previously has not been a reasonable method for the production of custom products. However, technological advances in recent years in the field of computer-assisted design and computer-assisted manufacture (CAD–CAM) have made possible a more widespread application of automation to design and manufacturing. Moreover, the rapidly declining prices and rapidly increasing power of computer technology make it feasible to introduce such automated methods into the clinical environment of the prosthetics-orthotics laboratory.

An absolute priority is proposed for an REC to:

• Design, develop, and evaluate computer-assisted methods for the analysis, design, and fabrication of prostheses and orthoses for clinical applications;

• Develop and demonstrate techniques to use CAD–CAM in the analysis of individual prosthetic and orthotic requirements in terms of shape, pressure and force.

• Explore the applications of CAD–CAM to the improvement of the cosmetic acceptability of prosthetic and orthotic devices;

• Investigate the use of CAD in the design of orthotic linkages for individuals;

• Demonstrate the possible uses of CAD–CAM to transmit data to distant sites for customized production of prosthetic and orthotic devices for individuals in remote areas;

• Assess the potential impact of use of CAD–CAM on reducing the labor intensiveness and long lead-times generally involved in custom prosthetic and orthotic applications;

• Assess the implications of CAD–CAM for the management of clinical prosthetic-orthotic practices, including accuracy, data storage and retrieval, measurement of use factors, and other aspects;

• Conduct at least two studies of the state-of-the-art on these specialized applications of CAD–CAM; and

• Provide training to engineers, prosthetics, orthotists, and computer professionals and make findings of the Center widely available to relevant parties.

Blindness and Low Vision Sensory Aids

Blindness and visual impairment lead to severe handicaps in education, employment, recreation and daily living. The national Center for Health Statistics and other authorities variously estimate the number of legally blind persons in the United States at 400,000 to 600,000, with another 1.4 million who are severely visually impaired. More than 10 million others have significant visual impairment which cannot be further improved with corrective lenses. Aside from those with reduced visual acuity and fields, there are also large and rapidly increasing numbers of older individuals with impairments in contrast, binocularity, and adaptation which handicap their performance in a wide variety of everyday tasks. Other increasingly complicating factors are the ever-greater numbers of persons with other (often auditory) impairments combined with visual disability, and the growing incidence of premature infants at risk for visual handicap.

Technological innovations arising from the development of new scientific and medical knowledge can have a positive impact on these problems. Progress has already been made in this field, including advances in communications, computer access, educational and vocational aids, and optical amplifiers for low vision, orientation and mobility aids, and improved functional vision assessment. However, in addition to further improvements in these areas, there are emerging areas of technology to be explored. Some of these new areas are related to the changing demographics of the visually impaired population, particularly the increasing need for rehabilitation of those whose visual impairments are due to progressive diseases. Other emerging challenges are due to the rapid advance in computer applications (including computer graphics), communications, and other technologies which must be made accessible to the blind individual for the future.

An absolute priority is proposed for an REC to:

- Develop a range of electronic education aids to assist the teaching of perceptual, manipulative, and cognitive skills to the child with visual or multiple handicaps;
- Develop improved characterizations of the disease processes underlying such progressive visual disorders as age-related maculopathy (ARM), in order to adapt to the changing rehabilitation needs, including the relation of ARM to other diseases of the geriatric population;
- Develop a collaborative team approach incorporating clinicians in vision and audition, pediatricians, neurologists, and researchers, to develop innovative methods to refine diagnosis, prognosticate developmental anomalies, and devise optimal rehabilitative strategies for multifaceted problems such as vision/hearing multihandicaps and cortical blindness;
- Apply new scientific and medical knowledge to the design and selection of improved low vision aids for filtering, magnification, and illumination, with improved matching between the device, environmental modifications, and the underlying disease characteristics;
- Develop population data to better define the potential markets for various classes of sensory aid technology;
- Develop new technology and methods for improving access by blind and visually impaired persons to computers, including better approaches for obtaining overviews of screen and file contents and access to the increasingly graphics-oriented computer hardware and software coming into general use;
- Explore technology to promote easier access by blind persons to other computerized equipment and information such as bank teller machines, music synthesizers, bar code readers, electronic databases and communication systems, and to enable them to benefit from computer-assisted instruction;
- Evaluate reading machine technology to address the reasons for the present apparent under utilization of these systems.
- Develop and test specialized job-site modifications, using the latest available technology, to enhance employment opportunities for blind individuals;
- Develop and test new and responsive technology for communication, employment, and daily living to meet the needs of deaf-blind persons;
- Provide information on sensory aids to consumers and professionals, and develop a method to obtain feedback on needs and satisfaction; and
- Design and conduct appropriate training activities for rehabilitative personnel, clinicians, and consumers to disseminate and encourage utilization of new rehabilitation engineering knowledge.

Research and Demonstration Program

Research and Demonstration Projects (R&D) support research and/or demonstrations in single project areas on problems encountered by individuals with handicaps in their daily activities. These projects may conduct research on rehabilitation techniques and services, including analysis of medical, industrial, vocational, social, psychiatric, psychological, recreational, economic, and other factors to improve the rehabilitation of individuals with disabilities.

Priorities

Supported Employment Programs for Persons With Long-Term Mental Illness

The Advisory Group on Psychiatric Disability and Supported Employment of the Rehabilitation Services Administration (RSA) has considered service and research needs for persons with long-term mental illness. Recent developments, including the Rehabilitation Act Amendments of 1986 and the supported employment "State-Change" demonstration projects, have greatly expanded the number of supported employment activities for persons with long-term mental illness. There has been a growing number of requests to the University of Oregon Supported Employment Technical Assistance project for assistance in organizing supported employment activities and in identification of project components for individuals with mental illness. State agencies and mental health organizations will benefit from research results at this time. Results are also needed to report to the Congress on program developments. Project materials will be used to implement and improve local and state-supported employment activities for persons with long-term mental illness.

An absolute priority is proposed for a project to:

- Examine the organizational configuration, staff training and characteristics, service population, service and caseload mix, caseload size, and funding approaches for supported employment programs for this target population;
- Identify organizational interrelationships of mental health, vocational rehabilitation, and psychosocial rehabilitation programs and test models for optimum services; and
- Identify effective program features and client outcomes, including types of employment, methods of long term support, service strategies, and funding patterns.

Chronic Low Back Pain

A major goal of the treatment of patients with chronic low back pain should be to increase functional capacity, probably the most important factor in preventing recurrence of low back injury. More directly, improved functional capacity allows the patient with chronic back pain to enter a more active and productive life, minimizing associated disbility. Current information on functional capacity is based primarily on data acquired on injured athletes, and the database should be expanded. There is a need for more information on the cost/benefit characteristics of various physical training programs as they relate to all patients with chronic back pain. There is little information available, as well, on the relative importance of specific muscle group and regional flexibility training compared to whole body work-hardening programs, which include more eccentric loading and coordination demands.

An absolute priority is proposed for a project to:

- Determine the relative importance of physical, psychological, and occupational components of the multidisciplinary programmatic approach to treatment of patients with chronic low back pain;
- Study the importance of patient independence and self care on rehabilitation of low back pain and prevention of recurrence;
- Evaulate successful rehabilitation programs to determine their cost/effectiveness;
- Determine minimum outcome criteria for grading pain versus disability, to include: Pain relief, level of function, return to work, medication, utilization of health care system, quality of life, litigation, recurrence, and profiles of health care providers.
- Conduct collaborative prospective studies of surgical interventions using controlled and randomized clinical trials;
- Conduct collaborative prospective studies on commonly used, but unproven, passive modalities of therapy;
- Develop a generic test battery to determine capability for return to work and activities of daily living without recurrence of low back pain, including

minimal clinical evaluation, psychological evaluation, and physical (whole body), mechanical, and physiological tests; and

• Develop and test methods of early identification of those who will not return to work.

Research in Adventitious Hearing Impairment

Most research on adult onset hearing loss has focused on diagnostic and amplification technologies and on neurological, anatomical and physiological changes in the cochlea, auditory nerve, brain stem, and cortex. Aural rehabilitation models have been published. However, despite the prevalence of hearing loss, and despite abundant anecdotal accounts of its human and economic costs, there has been surprisingly little research to examine the psychosocial effects of hearing loss in adulthood.

In 1986, NIDRR convened a conference on aging and rehabilitation; in one segment of that conference, a number of research scientists, health care professionals and persons from service-delivery agencies met to discuss priorities for collaborative research on adult onset hearing loss. This priority is based on research needs identified at that conference. NIDRR announced this priority for competition in fiscal year 1988, but none of the applicants was deemed suitable for funding. Therefore, a new competition will be held.

An absolute priority is announced for a project to:

• Analyze characteristics of adults who have adjusted successfully to hearing impairment, including such variables as personality factors, nature and severity of the hearing loss, communication styles, support networks, and interventions with professionals;

• Identify successful rehabilitation strategies, emphasizing professional attitudes toward persons with hearing loss and behaviors that may impede or facilitate adjustment;

• Investigate interactions between biological and psychosocial phenomena, with an emphasis on assessing the extent to which these interactions exacerbate disability caused by hearing loss in middle and later life; and

• Evaluate existing databases on health status, psychological characteristics, and behavioral patterns to determine the impact of adventitious hearing impairment.

Rural Job Development and Job Placement

Small businesses are the primary sources of employment in rural areas. With the decline in the number of active farms, small businesses that depend on farms are also in economic jeopardy. Farmers who are disabled in farm accidents (200,000 disabling injuries occur in the agriculture industry each year, amounting to 58 per 1,000 active farmers) may not be able to return to farming. Alternative employment placements will have to be developed and retraining provided for primary employment or for secondary employment to supplement low farm prices for those who do go back to farming).

An absolute priority is proposed for a project to:

• Analyze employment patterns and the hiring practices of various categories of employers in rural areas and project future employment opportunities in various industry sectors and occupational classifications; and

• Develop and test research-based strategies for use by rehabilitation agencies and community-based organizations in developing new placement opportunities and providing training for those new opportunities.

Community-Based Rural Projects

There are fledgling community-based independent living and service delivery programs in rural areas that need technical assistance in order to develop or continue. Some have received RSA Independent Living or other Federal or state support in the start-up process, others are entirely community-level efforts.

Programs in rural areas encounter unique difficulties. For example, the lack of transportation and the high cost of communication and travel barriers are burdens to programs in rural communities. Rural independent living programs need assistance to develop mutual supports, combine mutual supports, combine resources, keep abreast of information resources, and implement new ideas into practice. It is important that such programs be "owned" by the communities and, therefore, continue when federal funding has expired.

An absolute priority is proposed for a project to:

• Identify exemplary rural independent living programs that have successfully assembled unique resources to increase the potential of persons with disabilities for living independently in rural areas;

• Verify the effectiveness of these programs and develop strategies to replicate these practices in other areas for similar groups, including an assessment of a variety of factors unique to rural areas such as cultural and historical patterns, unique employment settings, exceptional terrain or climatic conditions, and extremely depressed economic conditions; and

• Share information from this nationwide project with the Research and Training Center on Rural Rehabilitation Services at the University of Montana for further refinement and dissemination.

Effective Client-Counselor Interactions in Vocational Rehabilitation

Basic principles of rehabilitation formed in law and in professional training emphasize that the consumer of services must play an active, expressive role in reaching his or her objectives. All individuals served through the State-Federal vocational rehabilitation program must have an Individualized Written Rehabilitation Program (IWRP) that reflects their substantial involvement. The psychosocial rehabilitation approach that was designed to foster the independence and development of people with emotional disabilities has been described, in part, as directed to the development of full human capacity, self-determination and normalization through a deprofessionalized, non-medical model, environmentally sensitive work-centered process. Similar principles are incorporated in the ideals of supported employment. However, these idealistic models of active consumer self-determination often are not verified in empirical studies of client satisfaction and case management. Continuous identification and verification of these factors is essential to effective counseling.

An absolute priority is proposed for a project to:

• Identify specific techniques, attributes, skills, characteristics, features, and related factors of client-counselor interaction that increase the participation of individuals, particularly severely disabled people, in making decisions regarding their rehabilitation; and

• Develop models and recommendations for ongoing processes and information-sharing or training programs to promote effective client-counselor interaction and to reach the audiences concerned with enhanced individual client self-advocacy in rehabilitation.

Developing Vocational Rehabilitation Programming for Low-incidence, Geographically Dispersed Disabled Populations

Statistical compilations on the prevalence of need for assistance in

activities of daily living (ADL) among disabled adults, the incidence of selected congenital malformations per 10,000 total births, and of handicapping conditions of persons enrolled in various education and rehabilitation programs reveal a pattern of numerous conditions for which there are not precise or reliable estimates of prevalence. Some examples of these low-incidence or low-prevalence conditions from National Health Interview Surveys, 1983–1985, include Spina Bifida, absence of arms or hands skin cancer, bone cancer, leukemia, absence of fingers-toes-feet, and certain anemias.

State vocational rehabilitation agencies, special education programs, medical rehabilitation facilities, disability income benefits programs, and disability researchers have identified the need for improved knowledge of the rehabilitation needs of, and effective programming for, such populations. There is particular need for collaborative planning models for human service provider organizations to use in developing and exchanging information, making individual referrals, supporting family members of low-incidence groups, and collaborating with self-help and advocacy organizations.

An absolute priority is proposed for a project to:

• Conduct an extensive literature review and programmatic survey to identify, classify, and prioritize for project investigation major problem areas in the rehabilitation of low-incidence disabled populations;

• Develop and demonstrate improved methods of programming for low-incidence, geographically dispersed, disabled populations, including information exchanges, referral networks, advocacy group involvement, and identification of "best practices"; and

• Convene a National State-of-the-Art Conference and implement a national dissemination and utilization plan to highlight findings of the project.

Issues in the Expansion of Private-Sector Rehabilitation Services

A recent report, *Private Sector Rehabilitation: Lessons and Options for Public Policy*, prepared for the U.S. Department of Education under contract No. 300–85–D141, identified a variety of innovative patterns of collaboration between proprietary rehabilitation providers and public rehabilitation agencies. In particular, "fee-for-service" units staffed by salaried state employees and operated with State funding appear to offer a viable, "Fair Competiton" public sector alternatives to private providers in areas such as rehabilitation of injured workers. Also, State use of private vendors to deliver case management in providing services to traditional state vocational rehabilitation agency clients was determined to be a possible option in an Arizona study. However, existing data are inadequate for determining long-term benefit-cost implications for these and related alternative in public-private rehabilitation collaboration.

An absolute priority is proposed for a project to:

• Analyze variables associated with use of "fee-for-service" and "vendor service" arrangements in the delivery of rehabilitation services to workers' compensation claimants, with special emphasis on the effects of litigation, settlements, re-entry to public rehabilitation services systems, availability of public versus private services, and eligibility questions;

• Analyze the extent to which disabled persons are served outside of the State vocational rehabilitation system, and determine the characteristics of the clients, the nature and costs of services, and outcomes; and

• Develop and assess research-based management strategies to assist public rehabilitation managers to operate services in collaboration with or parallel to those of private service providers.

Supported Employment and Enhanced Maximizing Human Potential

A number of research studies have identified the need to address the impact of supported employment on the "Quality of Life" of supported employees and their families. Although many studies have addressed the remunerative outcomes of supported employment, published reports have not yet fully explored "intangible benefits" or qualitative factors in individuals' lives that change as a result of supported employment. Suggested areas for study include those related to individual behavior and skills, physical health, community participation, mental health and self-concept, and family satisfaction of supported employees. Research on this topic has been impeded by the lack of accepted definitions of "Quality of Life," inadequate qualitative measures, and analytical problems such as unintrusive access to personal and job information and limitations in structuring comparison groups of individuals in supported employment versus comparable non-vocational or non-supported employment settings.

An absolute priority is proposed for a project to:

• Conduct an empirical investigation of one or more supported employment disability populations, such as developmentally disabled individuals, physically disabled individuals, persons who have traumatic brain injury or long-term mental illness, to determine the qualitative impact of supported employment in terms of behavior, physical and mental health, community integration, family satisfaction, and such additional areas as the investigator deem significant; and

• Report the results of the study in a national conference with substantial participation of consumers, providers, family members, employers, researches, and public officials.

Stress and Disability Management

Stress has been described as a feeling of being under pressure, of not being able to cope, of feeling irritable, anxious, and as if things are out of control (Department of Health and Human Services Employee Assistance Service). Stress affects individuals in different ways; some manifestations of stress include decreased job productivity, increased absenteeism, increased worker dissatisfaction, deteriorating health, problems in interpersonal relationships, and increased use of alcohol and drugs. Many of these same factors have been associated with the onset of disability in employed persons, whether due to accident on or off the job, a chronic health problem, or the sudden appearance of a health problem.

The combination of loss of control, emotional distress, and disability often becomes a constraint to communication and redress of difficulties for disabled workers. Disabled workers, due to the stress they may be experiencing, are often unwilling or unable to seek the help of disability management resources such as trained supervisors, employee assistance programs, or rehabilitation referrals. Moreover, cooperation of the disabled worker is necessary for active employee participation in achieving the optimum person-environment fit on the job based on individual and organizational characteristics.

An absolute priority is proposed for a project to:

• Analyze the relationship between stress factors and disability management components to identify barriers and incentives which, when addressed in employment settings, will improve on-the-job assistance to disabled workers in such areas as coping strategies, redesigning jobs, person-environment fit, relaxation training, and health risk awareness; and

• Conduct controlled demonstrations of the use of disability management

techniques with "at risk" high stress groups (medical texts associate cardiovascular disease, gastro-intestinal disorders, musculoskeletal problems, and deficient immune systems with stress) providing appropriate measurement of results in productivity, absenteeism, employee satisfaction, employer satisfaction, benefits use, interpersonal communications between worker and supervisor, and related variables.

Knowledge Dissemination and Utilization Program

Knowledge Dissemination and Utilization Projects (D&U) ensure that rehabilitation knowledge generated from projects and centers funded by NIDRR and others is utilized fully to improve the lives of handicapped persons.

Priorities

Regional Information Exchanges

There is a need to promote the widespread use of new, validated rehabilitation practices and exemplary rehabilitation programs in selected priority areas in order to improve the service delivery system for disabled individuals. NIDRR proposes to address this need by establishing one or more regional information exchanges similar to the regional diffusion networks that are now operating. NIDRR believes that these exchanges will be most effective if they focus on facilitating the adoption of program models developed locally or within the same region. Also, NIDRR believes that this information exchange will be strengthened by the inclusion of expert consultants available to provide specific technical assistance aimed at rehabilitation agencies.

Priority areas for diffusion efforts during the period of this priority will include the use of rehabilitation technology in vocational rehabilitation, barrier-free environments, and transitional employment programs, and other topic areas that are of concern to the specific region or that are agreed upon by NIDRR and the recipient of the award.

An absolute priority is announced for one or more projects to:

- Develop criteria for identifying exemplary rehabilitation programs, and develop information collection instruments which include measurements related to the identified criteria;
- Solicit nominations of exemplary programs in the priority areas from program operators, consumer organizations, and other relevant parties in the selected region; giving consideration to inclusion of special demonstration projects funded by the Rehabilitation Services Administration or other Federal agencies;
- Develop and implement a procedure to select the most promising programs for further consideration and arrange independent peer reviews of those programs to determine exemplary programs for diffusion purposes;
- Develop public relations and marketing approaches to make the wide audience of rehabilitation service providers and special educators aware of the exemplary programs and stimulate their interest in adopting or adapting similar models, assisted by the diffusion network;
- Facilitate the exchange of technical assistance between the exemplary program and the requesting adopter program through onsite demonstrations, training materials, and direct consultation;
- Develop and maintain a referral system of expert consultants in these priority areas of the project to facilitate the linkage of service providers and disabled consumers to knowledgeable resources; and
- Maintain appropriate data on the diffusion network to support an evaluation of its effectiveness.

Networking With Centers for Independent Living and Independent Living Service Providers

There are approximately 360 independent living centers (ILCs) and independent living service providers (ILSPs), providing services on the local level throughout the United States. Over one-half of those receive funding from the Rehabilitation Services Administration.

For the past two years NIDRR has funded three projects to develop, demonstrate and evaluate the effectiveness and utilization of computer networking among ILCs and ILSPs. The projects surveyed ILCs and ILSPs regarding computer capacity, communication and information needs. The projects developed and provided information databases on management techniques and simplified software, resources, policy and program developments. The projects also created bulletin boards for communication and information sharing among centers and established access to national database.

These three projects demonstrated the interest and capability of ILCs and ILSPs to effectively utilize networks and databases, share techniques and data among centers, and serve as local information and referral sources for information compiled on the national level (e.g., the ABLEDATA and REHABDATA information bases). These projects also demonstrated a need for aggregating local and regional databases for use at the national level. Competent information brokers are needed to provide training and technical assistance and facilitate access to national databases and information.

Any project to be funded under this priority must directly involve disabled persons, including those who have experience with independent living service provision, in the planning, development and conduct of the project activities;

An absolute priority is proposed for one or more projects to:

- Establish criteria for selection of Centers for Independent Living (ILCs) and Independent Living Service Providers (ILSPs) on a multiregional basis that have or can acquire the hardware and software and personnel capability to participate in the network;
- Provide technical assistance and training to enable those Centers to provide information brokerage services to ILCs and ILSPs;
- Coordinate and collaborate development and implementation of networking efforts with the other NIDRR funded projects under this priority to promote consistency and cross-system capability including participation by the Project Director at an annual two day meeting in Washington, DC with the NIDRR Project Officer;
- Develop computer databases on available resources and information including management, planning and evaluation materials and software, employment opportunities, conferences and educational opportunities, funding opportunities, housing, IL services and resources, policy issues, and related resources important to independent living;
- Develop computer conferencing capability to enable network members to communicate among centers on issues and problems of concern and participate in group educational sessions;
- Facilitate access to national databases, including REHABDATA and ABLEDATA, and designate a knowledgeable and trained staff person to serve as the Project Information Broker to provide information, training and technical assistance on the databases to the IL based information broker;
- Develop a database system to collect and compile "experiential" data for systemwide information and referral. Such a system will require a use of consistent terminology and indexing for data input at the state and local levels;
- Facilitate creation of such databases among local ILCs and

aggregate them on the multiregional basis; and

• Provide training and technical assistance to promote utilization of the system and conduct annual evaluations to ensure the system is meeting the needs of the participants.

Demographic Data Analysis

Effective planning for research, services, or policy related to the disabled population requires detailed information about the size and characteristics of the population. This information is needed by Federal, State, and local agencies to plan services, transportation, housing, income maintenance, and recreation.

Federal, State and private administrators and planners have identified a need for a central source for demographic and other data on disability, and a comprehensive system for the collection of those data. A number of Federal agencies, some states, and many private research institutions collect information, analyze some of it, and often produce public use tapes that also include great amounts of analyzed data. As a consequence, much of the most critical data on disability are not analyzed or are poorly disseminated, or both. There is a continuing demand for information on the incidence and prevalence of disability and its distribution among various population groups. Other data such as service use, distribution of benefits, earnings, and costs of care would be invaluable to disabled individuals and their organizations, planners, researchers and policymakers.

Information developed through this activity should be made available to a variety of potential users, and potential users should be involved in the planning, implementation and evaluation of the project.

An absolute priority is proposed for a project to:

• Develop and update estimates of the incidence, prevalence, and distribution of various disabilities, using existing data;

• Develop a database of information from governmental and nongovernmental data collection efforts, encompassing information on specific disability conditions, limitations in activities of daily living, patterns of service use, needs for assistive devices, employment and earnings, benefits payments, insurance, and demographic data;

• Conduct secondary analyses of major data files, such as the Survey of Income and Program Participation and the Health Interview Survey, and others to provide needed information; and

• Develop and disseminate to consumers and professionals information on the characteristics of the disabled population.

The International Exchange of Information and Experts in Rehabilitation

There are rehabilitation practices and research projects in other nations that can serve as the impetus for improvements in rehabilitation research and services delivery in the United States. For example, the now widely accepted practice of immediate post-surgical fitting of prostheses was developed in Poland; the concept of disability management at the workplace was brought to U.S. attention as a result of concepts uncovered in past international exchanges; and Functional Electrical Stimulation programs in the United States owe much to early work done in Yugoslavia. In addition, there are practices in the United States that could be extremely beneficial to foreign professionals and researchers.

Fostering such cross cultural collaboration and providing networks to maintain collegial contacts requires personal exposure of researchers and professionals to other cultures. In addition, the good practices and knowledge derived from abroad need to be disseminated to U.S. audiences through monographs and utilization conferences.

An absolute priority is proposed for a project to:

• Identify areas of policy and practice that are of significant concern to NIDRR and to disabled persons and the rehabilitation community generally in the United States and in which there are significant developments in other countries that could provide useful guidance for United States agencies;

• Develop and implement a plan for United States experts to study specific policies, practices, programs and research results in other nations;

• Provide for the preparation of monographs on rehabilitation research topics by foreign experts or U.S. experts, who have had beneficial study visits abroad;

• Conduct utilization conferences to disseminate information on selected topics of international significance to rehabilitation; and

• Evaluate the impact on specific rehabilitation practices in the United States of international exchange of information and experts arranged for under the project.

Developing Consumer Group Capacity to Facilitate Technology Transfer

There is a major new emphasis on delivering technological aids and devices to consumers in a timely, appropriate, and effective manner. The development of technological knowledge and assistive devices far exceeds the mechanisms for transferring those aids into regular use. NIDRR and OSERS are involved in major new efforts to improve the delivery and use of aids and devices.

Independent living organizations, parent organizations, and other consumer groups have direct contacts with individuals with disabilities and often first-hand knowledge of their technology needs. These groups could be invaluable resources in assisting in the spread of knowledge, the acquisition of technology, the appropriate use of technology, and consumer feedback on the effectiveness of the technology. The potential contributions of such organizations to the national effort to improve technology service delivery need to be explored and augmented.

An absolute priority is proposed for a project to:

• Explore the optimum roles for independent living programs, parent groups, and other consumer organizations in identifying and promoting the acquisition, use, and assessment of technological aids and assistive devices by persons with disabilities;

• Investigate opportunities for innovative involvement of consumer groups, with RECs, State rehabilitation agencies, and technology delivery programs; and

• Develop and test research-based models to involve organizations representing consumers in facilitating the appropriate use of assistive technology.

(Catalog of Federal Domestic Assistance Nos. 84.133A, 84.133B, 84.133D, and 843.133E, National Institute of Disability and Rehabilitation Research.)

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Secretary of Education.

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